

Flight, July 10th, 1909.

Flight

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

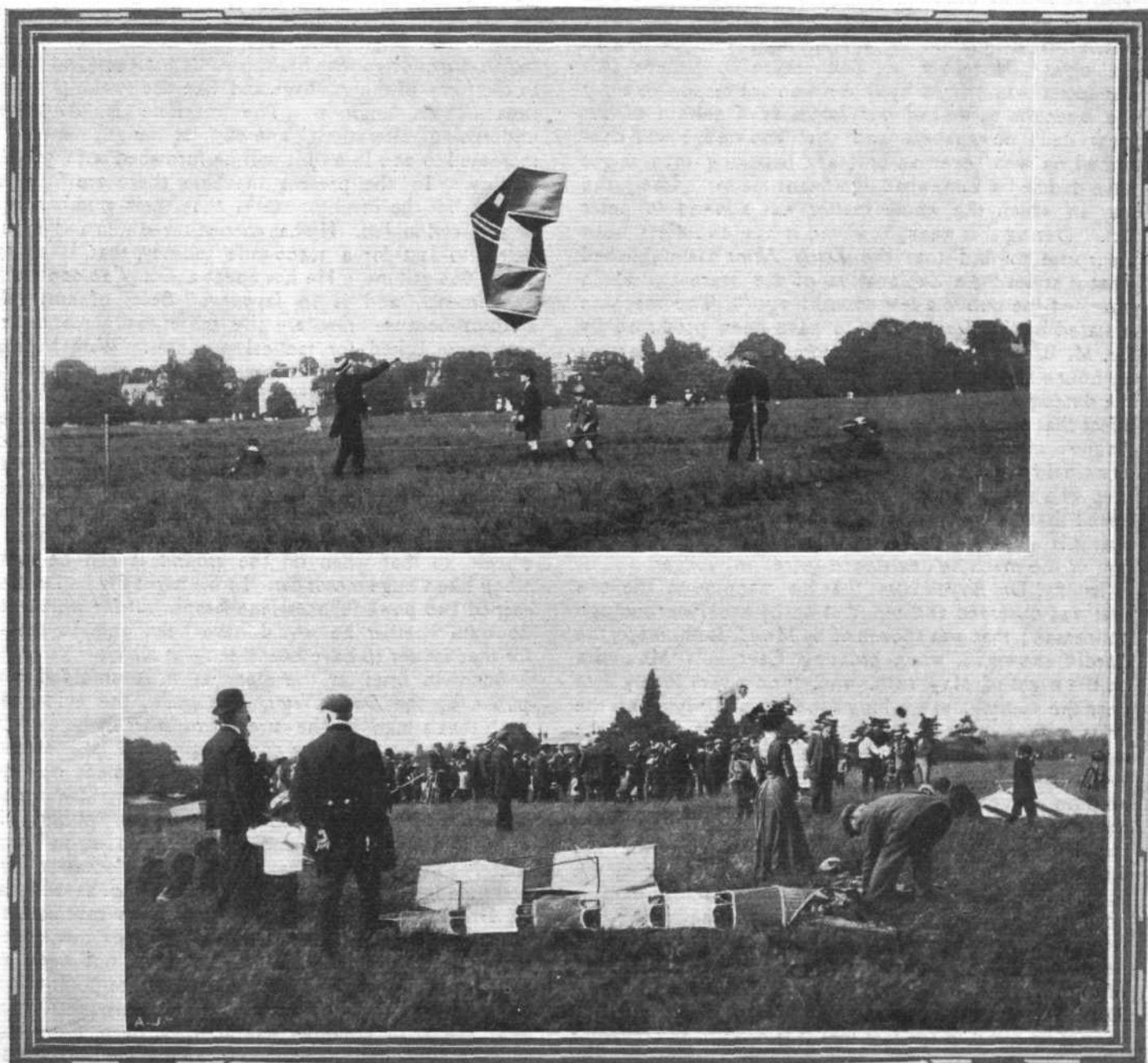
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AT THE KITE-FLYING ASSOCIATION'S MEETING.—Launching Gamage's "Scout" kite (top), and competitors preparing their kites for flight.

"THERE ARE MORE THINGS IN HEAVEN AND EARTH, HORATIO—"

It may be recalled that a few weeks ago accounts of airships seen in various parts of the United Kingdom at nights somewhat puzzled the public. The problem led to a good deal of speculation, and to no very satisfactory solution on the part of what one might style the more sensational section of the Press, for the point of all the stories told usually implied that if there were anything in these night visits, they could be only from French or German airships—preferably German for the sake of sheer sensationalism. There are times when confidences have to be kept. For some considerable time it has been known to FLIGHT, firstly, that this talk of foreign airships was utterly unfounded, and secondly, that there was a real foundation for airships that were passing in the night. Moreover, we had reason to believe that our secret was shared by those who are responsible for the direction as well of our forces as of certain of our great daily newspapers, and that knowledge was confirmed by what even an ordinary believing man might have deemed a somewhat significant matter, namely, the way in which the whole matter was allowed to peter out. During this week, however, it has doubtless been a surprise to find that the *Daily News* has published what it styles "An Explanation of the Scareship which obsessed the public a few months ago." The machine is stated by the *Daily News* to have been produced by Dr. M. B. Boyd at a distance from London of scarcely an hour's ride by motor car, and what one might style the outcome of a report that has been published to the effect that a private syndicate is being formed, with an English millionaire, who is the director of one of the principal railways, as one of the chief of the many wealthy men who are putting up the desired £250,000. It is stated that the reason for the disclosure at this time is that it is impossible to keep the hiding-place and the fact of the machine's existence secret any longer.

Briefly, Dr. Boyd claims that his machine is the one that was observed and reported on by the Peterborough policeman; that was spoken of by Mr. C. Lethbridge, the Cardiff showman, when crossing Caerphilly Mountain on the night of May 18th, who, "on a very lonely spot near the summit, saw a long tube-like affair lying on the grass with two men close to it"; that it is also the machine that was seen by the signalman at Cardiff Docks on the same night, and by the people of Northampton on May 15th, and finally that it is the machine which made a continuous flight by crossing the Irish Channel, and landing at a point beyond Belfast at 4 in the morning, having started from the English shore at 9 the previous night, the actual crossing occupying less than four hours. Before the public can be expected to accept these claims it will naturally be needful to make some daylight flights, and it is because of the impossibility of keeping it secret any longer that Dr. Boyd says he has come out so far. Of course, one cannot be blind to the fact that it is open to any inventor who has knowledge of the fact that high authorities have evidence of flights having been made by night in the neighbourhoods named, to go and claim them on behalf of his own invention. The furnishing of proof is Dr. Boyd's own affair. He says himself that he has plenty of proof about his flight across the Irish Channel, which he crossed at distances from shore to shore of

about 94 miles at a mean speed of about 32 miles an hour. He is taking out patents now, and hopes shortly to publish pictures of his machine, with which he will commence daylight trials in a month or six weeks. He describes it to the *Daily News* as having "no car suspended from the envelope, which is rather oval in shape and is divided into three separate bags, the works being placed between them, and the motors having a closed-in compartment to themselves at the end. From each side extend wings like an aeroplane." The machine is 120 ft. long and its present motors are of 300-h.p. by contrast with the 220-h.p. motors furnished to the Zeppelin aircraft, which are 446 ft. in length. Dr. Boyd attributes his success in large measure to the direct drive that his apparatus achieves, and in part to the form of the gas-bags and likewise to the powerfulness of his engines. The machine is at present undergoing alterations whereby its length is to be increased to 200 ft. and it will be furnished with 500-h.p. motors. In the present machine there are four propellers, but the inventor states that their number is to be at least doubled. He has carried three men and enough petrol to last for a 1,400-mile journey, that is to say, about 600 gallons. He has spent about £20,000 on his experiments, and is in favour of fleets of small size airships because they are the more easily manoeuvred and more suited for tactical purposes. With his eight propellers and the new engines, he says that he will be able to guarantee a speed of 45 miles an hour, which is about 40 per cent. faster than anything that has yet been done, and states that he will then be able to carry about 1,200 gallons of petrol and eight persons. The vessel already has a roomy cabin fitted with hammocks, wherein members of the small crew of three were able to take a period of rest. The vessel is fitted with three pairs of wheels, so that when on the ground it can be driven along like a huge motor car. In his night flights Dr. Boyd carried two powerful acetylene lamps, but for which it is doubtful whether he would have been able to see—or for that matter to have been seen—at all.

Such, in brief, is the story as it is unfolded to the public by the *Daily News*. Naturally, the evidence is such that a man in the street can scarcely be expected to credit without further confirmation. That is a matter which does not concern us at the moment any more than does the precise period at which any inventor sees fit to abandon secrecy and come before the public. The event of the week now ending appeals to us in FLIGHT merely to this extent, that it furnishes an occasion for us to come forward and say without standing as advocates of Dr. Boyd's or of any other inventor's machine, that there is no question that at about the times mentioned a British-built dirigible balloon which has not been seen flying in the light of day did actually make point-to-point voyages of the considerable distances in question, also that the Irish Channel has actually been flown by a home-made dirigible balloon. That time will produce all necessary evidence in proof of this we are satisfied. Meanwhile it must strike the public as a very inspiring thing that private enterprise in this country has enabled such an achievement to be possible. Far from the news acting as something calculated to detract from the urgent necessity for putting Britain in possession of one

or more airships by presentation to the nation, we feel that it is an occasion that justifies more than ever support to the National Airship Fund that has been started by the *Morning Post*. Every additional evidence of what it is possible to achieve is something that proves the urgency that exists for getting the Army properly equipped, not in regard to one type of vessel alone, but of examples of all the leading types that have shown special points of merit. It is obvious that an airship that has been manœuvring over these islands in the dark of night must possess certain qualities that have not yet been proven to belong to many of the leading types of airships used abroad, but no matter how successful any one vessel may be, it is equally plain that it cannot enjoy the monopoly of practical development. We are merely at the beginning of achievement, and the urgency of the moment is to grudge no effort to assist the movement forward. The great need of airships at the moment is not for private enterprise, but for military and naval use. Thus early in the science in this country we are beginning to appreciate that there is a considerable difference between the aeronautical requirements of the Navy and those of the Army. Put broadly, the rigid machines appear more

likely to be of use to the first service, whereas for the second named, it is necessary to have at least some air-vessels that can be transported in as small bulk as possible by land. In other words, what is called the frameless sort of airship is, under certain conditions, the obvious requirement of the Army. We must not imagine that the authorities concerned with either service are lax. They are beginning fully to realise the need of it, but they are cramped as to means. Hence the great value to them of the wide-spread attention that has been drawn to the subject in all quarters as the result of the launching of the National Airship Fund. That does not aim at relieving the Government of its responsibility, but strives merely to take the first step in the way of providing, by patriotic contribution, an example of a full-scale practical dirigible, whereby incidentally the public itself may be convinced of the capabilities of such machines. In a word, the movement is worthy of support, and is, as has been proven by proceedings to date, having a very wide-spread effect in riveting public attention, not only to our backwardness as a nation in the matter of national equipment, but also to the very practical degree of achievement that has been won by private enterprise and by Government encouragement abroad.



FLIGHT AT THE TRAVEL EXHIBITION.

At Olympia there was opened on Tuesday of this week, July 6th, an Exhibition of Travel, in which, appropriately enough, flight formed a prominent section; prominent, that is to say, by comparison with the other things on view, for by no stretch of the imagination can we say that the flight section is anything very great in itself. It has, however, to do it full justice, two exhibits of unique interest, a Lilienthal and a Pilcher glider.

Two Pioneer Gliders.

Both machines belong to the Aeronautical Society of Great Britain, who have had them repaired by Messrs. T. W. K. Clarke, and the work has been carried out with great fidelity to the most authentic records which exist, so that the two gliders as they stand to-day may be taken as being absolutely what the intrepid but unlucky pioneers used in their experiments. Both machines are *au fond* the actual machines used, the Pilcher glider, of which we recently gave two photographs, being the very apparatus on which the inventor was killed. They were, however, in a more or less damaged state when handed over to Messrs. Clarke, and a considerable amount of careful work had to be done in order to restore them to their present condition. The Aeronautical Society are therefore to be congratulated on having put this work in hand, as there is no doubt that the utmost interest attaches to these machines, and time cannot fail to still further enhance their value.

Maxim's Flight Engine.

Another stand which is well worth a visit of inspection is that showing Sir Hiram Maxim's flight engine. It is one of the pair of compound steam engines employed on Sir Hiram Maxim's gigantic aeroplane, and weighs 310 lbs. It was capable of developing 180-h.p. with a steam pressure of 320 lbs. per sq. in. The pressure on the low-pressure piston was 125 lbs. per sq. in., which uncommonly high value was caused by the fact that there is a very large amount of clearance in the high-pressure

cylinder to prevent shock in case water should get into the engine through the pitching of the machine. The steam in the high-pressure cylinder was cut off at $\frac{3}{4}$ stroke while the steam in the low-pressure cylinder was cut off at $\frac{5}{8}$ stroke. The stroke of both cylinders was 12 inches. The area of the high-pressure piston is 20 sq. in., and that of the low-pressure piston 50.26 sq. in., their bores being 5.05 and 8 inches respectively. The speed was 375 r.p.m.

From the constructional point of view the engine is also extremely interesting, the hollow connecting-rods, the method of attaching the big-ends and gudgeon-pin, the hollow columns holding the crank-shaft bearings to the cylinder-casting, the light cross-heads and the hollow crank-shaft all being details of instructive value.

A Flapping-Wing Machine.

Another exhibit which is distinctly out of the common is one of the experimental flapping-wing machines used by Messrs. Frost and Hutchinson in their experiments. The wings of this machine are artificially constructed from natural feathers, which are sewn on to a silk ground, and a small petrol engine occupies the place of the bird's body, and flaps the wings up and down through gearing.

Models and Kites.

Of the remainder of the flight section, much is still incomplete as we go to press, and of that already on view there is the less to record since we gave such a complete description of the models which were shown at Olympia in March. Many of them are again shown. A new feature, however, which did not characterise the Aero Show to any very great extent, is an excellent exhibit of kites under the auspices of the Kite-Flying Association of Great Britain, but here, again, the account which we give of the Association's competition at Wimbledon on Saturday last in another part of this issue renders it unnecessary that we should refer specifically in detail to the kites at Olympia.

WRIGHTS' PATENT AUTOMATIC STABILITY.

THE WRIGHT BROTHERS HAVE APPLIED FOR A PATENT TO PROTECT A SYSTEM OF MAINTAINING AUTOMATIC STABILITY IN THEIR FLYER BY MECHANICAL MEANS.

BEARING in mind that the Wright Brothers have invariably in their public utterances given voice to the opinion that learning to fly was more or less like learning to ride a bicycle, and that a flyer had no more need for automatic stability than such a machine, it may possibly surprise a good many of our readers to learn that the Wrights have applied for a patent to protect a system which is calculated to render their flyer automatically stable in the air.

How far they intend to embody their latest idea in their actual machines it is, of course, impossible to say, but there is little evidence of any practical experience having been acquired with this new system, which, to use the orthodox patent phrase, they "prefer." Be that as it may, however, the impending patent is of considerable importance, and cannot fail to be of great interest to our readers, so we give herewith a brief review of its principle and a sketch showing one of its two applications in practice.

flying machine, may presumably be interpreted as implying compressed air. The mechanical brain of the apparatus, which gives the signal for its action by switching on the power, is in one case a pivoted vane acting under the influence of wind pressure, and in the other case a pendulum which is, of course, acted upon by gravity. In both cases the controller is merely used to operate a three-way valve; its influence upon the manipulation of the steering gear or elevator, as the case may be, essentially takes place through the agency of the relay mechanism which the opening of the valve brings into action.

The Compressed-Air System.

This relay mechanism consists of a kind of compressed-air engine which is linked up to the steering-gear or elevator, as the case may be, by means of a connecting-rod. The engine itself is operated by a compressed-air reservoir, which would presumably be kept charged by an engine-driven pump.

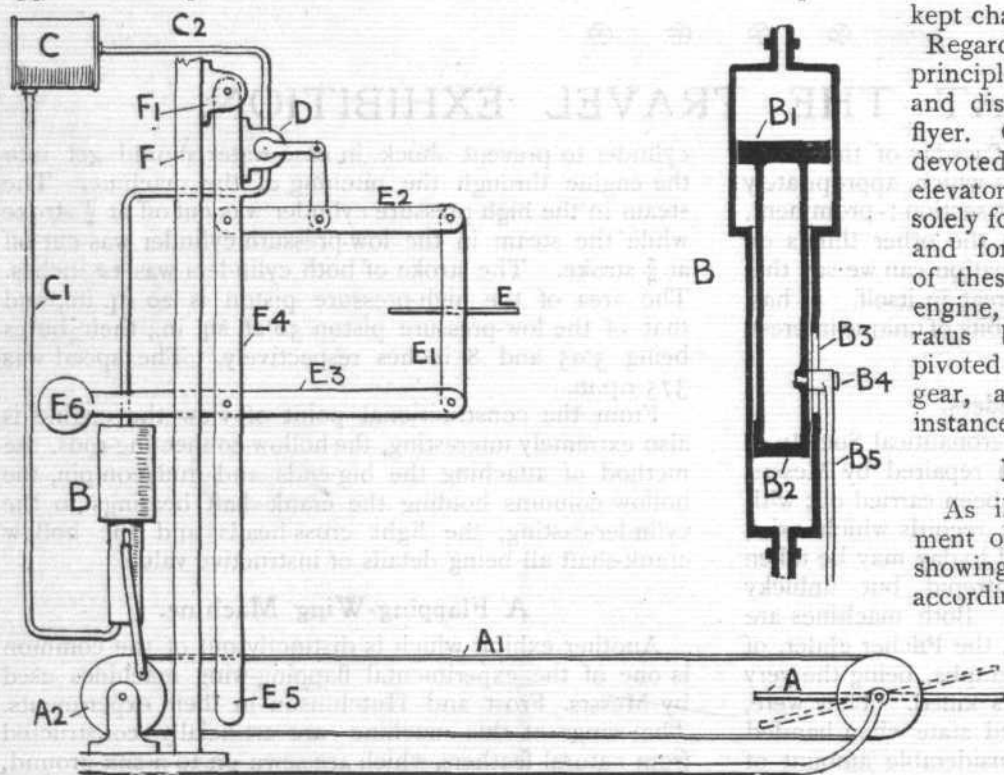
Regarding the compressed-air system as the principle, the patent covers two separate main and distinct applications of it to the same flyer. One of these systems is exclusively devoted to the automatic control of the elevator, the other is likewise reserved solely for the manipulation of the rudder and for warping the main planes. Each of these systems has its own reservoir, engine, and controller, the latter apparatus being, as already mentioned, a pivoted vane in the case of the elevator-gear, and a pendulum in the other instance.

Description of the Sketch.

As illustrating the mechanical arrangement of the apparatus, we give a drawing showing how it is supposed to be applied, according to the patent, to the operation of the elevator, which is shown at A as a pivoted flat plate, controlled by a rope, A¹, from a drum or pulley, A².

This pulley is a member normally under the control of the driver through the agency of a lever, but embodies such features in its construction as enable it to be coupled up at will through some form of clutch to the connecting-rod of the compressed-air engine, B, which is operated from the reservoir, C, to which it is connected by the pipes, C¹, C². Of these the former is in permanent communication with the lower end of the cylinder, while the latter leads to the upper end through a three-way valve, D, which is operated by the automatic movements of a horizontal vane or aeroplane, E, mounted on an arrangement of beams, E¹, E², E³, forming a parallel motion mechanism.

The frame, E⁴, on which the beams themselves are pivoted, hangs from brackets, F¹, mounted on an adjacent pair of the main struts, F, of the flyer, and one of its members is prolonged downwards to form a handle, E⁵, within reach of the pilot.



What the Device Does.

The fundamental idea is that of providing a supplementary mechanical control which will, when required to do so, relieve the pilot of the necessity of manipulating the elevator, rudder and warping levers by hand. The functions performed by the mechanical apparatus, which will be presently described, are precisely those which the pilot normally performs for himself, but it is more than likely, of course, that the precise manner of carrying them out may be rather different, as there is never quite the same "touch" about mechanical operations as characterises the human hand.

The Muscle and the Brain.

The power for working the controlling gear is, according to the patent, fluid pressure, which, for the purposes of a

Setting a Course.

The object of this arrangement is that the pilot may himself at any time reset the course or, as it may perhaps be better described, the neutral line, which means to say that if, after having flown along a horizontal course, he wishes to ascend, the automatic mechanism may still be retained in action to govern the machine against variations from its ascending path by merely re-setting the position of the frame, E^4 . Since the valve, D , is itself mounted on the frame, E^4 , and because the beams, E^1 , E^2 , E^3 , are independently in equilibrium as a whole by virtue of a balance-weight, E^6 , it will be evident that any alteration in the position of the frame, E^4 , will at once affect the state of the valve, D , that is to say, it may tend to close it if it was open or *vice versa*. Thus, supposing that the exact connections are such that the valve being open, the elevator gets tilted for ascent, then, should the pilot wish to ascend permanently, he will move the handle, E^5 , so as to open the valve a little way. This will have no effect directly upon the position of the controlling vane, E , because the balance-weight, E^6 , serves to keep that horizontal irrespective of the position of the frame, E^4 . The change from the horizontal to an ascending flight-path, however, will automatically result in a change of the real attitude of the vane, E , to the relative wind, which will now appear to the vane to blow from above, and will thus cause it, when the wind is strong enough, to fall a little and thereby close the valve, D . This action would bring the relay mechanism into action, and so alter the angle of the elevator, until the conditions are restored which allow the controlling vane, E , to return to its neutral position. Naturally the vane and its balance-weight are not dead beat, and consequently, if disturbed, oscillations are set up which require time to die out, and it is thus more than likely that the normal state of affairs would be one in which the vane is constantly jogging up and down.

Lateral Stability.

For regulating lateral stability a pendulum is used instead of a vane, the pendulum being suitably coupled to the valve, so that any canting of the flyer from its normal level causes the valve to be opened or shut according to requirements. The pendulum hangs straight down like a plumb-bob, under the influence of gravity, and it is thus really the movements of the machine as a whole about the pendulum as a fixed point which forms the control. In practice the normal state of the pendulum control would presumably be one of more or less continuous, although possibly slight, oscillation. In the same way that it is possible with the vane control to alter the neutral line, so can the same variation be accomplished with the pendulum, and if necessary the flyer be made to travel on a circular path indefinitely.

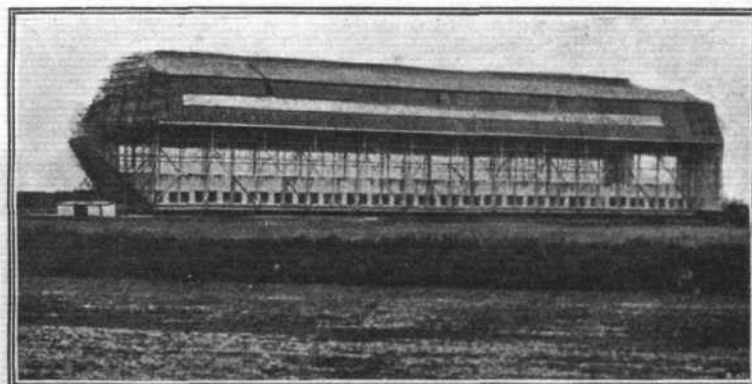
The Engine.

Having described the operation of the system, it now only remains to draw attention to the type of compressed-air engine which the Wrights have specified in their patent. The cylinder, B , of the engine is bored out in two diameters, and contains two pistons, B^1 , B^2 , which, however, form but a single unit, being coupled together by a trunk member which serves as a guide. In fact, it is the trunk member itself which really forms the smaller piston, as will be evident from the inset sectional drawing which represents this detail. A slot, B^3 , is cut in the wall of the smaller cylinder, so that the trunk piston can receive a

gudgeon-pin, B^4 , to which the connecting-rod, B^5 , is attached. The other end of the connecting-rod is, as has already been explained, coupled up to a clutch member, so that it can be brought into action when required. The small end of the cylinder is permanently in communication with the reservoir, and the air-pressure on the piston thus always holds it at the top of its stroke, provided that the large end of the cylinder is open to atmosphere, as is normally provided for by the setting of the valve, D , which has one of its three ports in free communication with the outer air. When the valve is operated so as to close this orifice and place the large end of the cylinder in communication with the reservoir instead, the piston is forced downwards because the area of the large piston now represents a correspondingly greater pressure than exists on the small piston. Directly the valve returns to its old position, however, and the exhaust port is open, the air pressure on the small piston at once forces it up to the top of its stroke. If the setting of the valve at any time is such that all the ports are closed, then the piston will remain in equilibrium in any part of its stroke that it happens to be at the time, and will continue there indefinitely, except, of course, should there happen to be any leakage.

The Patent.

As to the action of the apparatus in practice, we are unable to give our readers any information at the present time, because if the Wright Brothers have ever tried it they have succeeded very well in keeping the matter dark. That it is of considerable interest to find that they should have patented such a device goes without question, but it would be even still more interesting to know what they really think of it all themselves. Very many people take the line of argument that some form of automatic stability is bound to come, but whether this is the proper way to look at it or not, few will be found to dispute the fact that if a successful automatic stability system is evolved, it will find a very wide appreciation, among those about to learn the art of flight at any rate. As to whether the system which the Wrights seek to patent is *the* system or not, time and experience alone can prove, and as the patent is not yet granted them, it will be rather interesting to see if there are any oppositions to the claim, for it may be supposed that other inventors who think well of the general idea will be careful to try and keep the ground from being cut away under their feet by any too general claims on the part of the Messrs. Wright. The patent number is 2913 of 1909.



The immense balloon shed which is being erected at Gutes Blesdorf for the accommodation of the Siemens-Schuckert dirigible balloon. It is 150 metres in length, 48 metres wide, and 37 metres high.

KITE-FLYING AS AN ART.

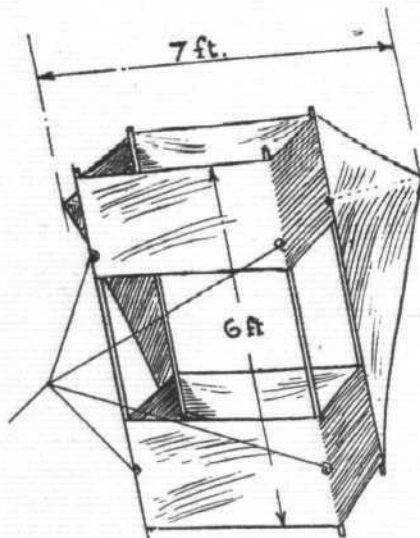
THE COMPETITION OF THE KITE-FLYING ASSOCIATION OF GREAT BRITAIN, HELD ON WIMBLEDON COMMON, JULY 3rd.



"Flight" Copyright Photo.

A lady competitor with her double [box-kite at the Kite-Flying Association's meeting, and preparing the Brodgen Burma kite.

UNDER the influence of the awakened interest in flight, one of the most fascinating games of our childhood bids fair to become the sport of scientists, for kite-flying is not only a pastime which gives those who practice it an open-air amusement, but it is an occupation for the leisure hour which can be productive of much useful information to the observant mind. The little boy who flies a kite well knows, although he may not understand their import, many aspects of real flight, which may quite well remain hidden for a long time, even from the experimenter with a full-sized flying machine. Under the ægis of the Kite-Flying Association of Great Britain, the pastime is receiving encouragement which it well deserves, and that the movement has a vitality which is worth developing may be judged from the enthusiasm displayed at the Association's competition, which was held



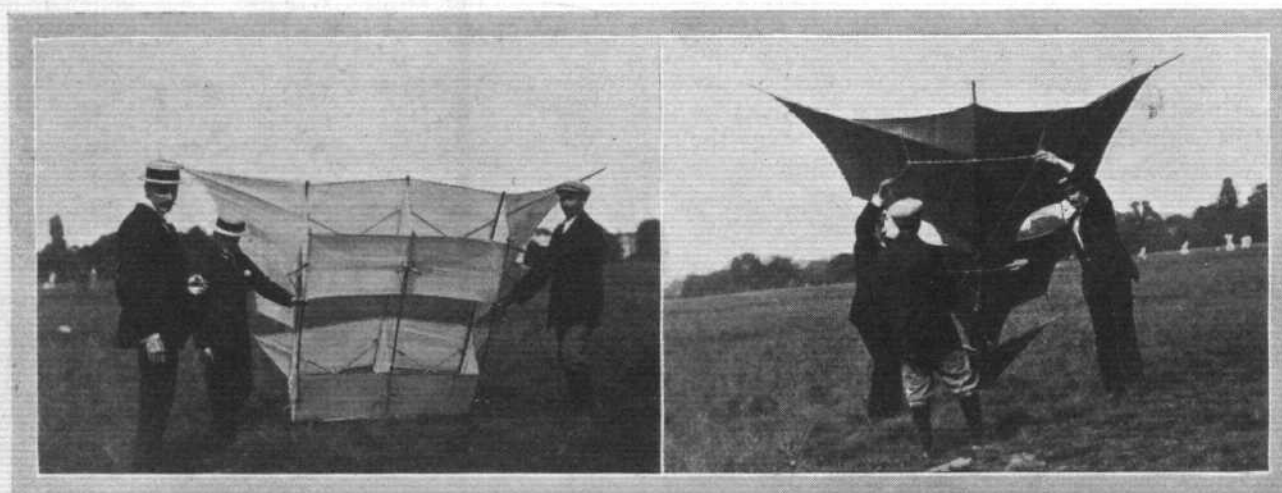
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The winning kite, designed and constructed by Mr. W. Barton. It is a large box kite with diagonal fins.

on Wimbledon Common last Saturday, July 3rd.

Purpose of the Test.

There, on the open ground in the vicinity of the old windmill, came some fifteen members of the Association, to say nothing of others outside the official lines, to test their skill in the handling, and also, it may be remarked, their judgment in the choice, of a kite. The competition was simple in the extreme, but doubtless as effective as can be expected for a beginning. At least, it aimed at some definite object, which was to encourage automatic stability by keeping the kite aloft for an hour at a restricted altitude of 600 ft., or rather, to be more correct, on the end of a line 600 ft. long, for the actual altitude attained with that allowance of string formed one of the



"Flight" Copyright Photo.

AT THE KITE-FLYING ASSOCIATION'S MEETING.—A box-wing kite (on left), and preparing to launch a "Burma" kite.

several headings under which marks were allotted. It was not the mere keeping aloft alone that satisfied the judges, but the steadiness with which the kites rode the wind that they took also into account, and by comparison with the sleepy steadiness of some of the "old stagers"—the term sounds appropriate, though it has nothing to do with old fashion in this case—the least signs of sprightliness were sufficient to meet with the utmost disfavour.

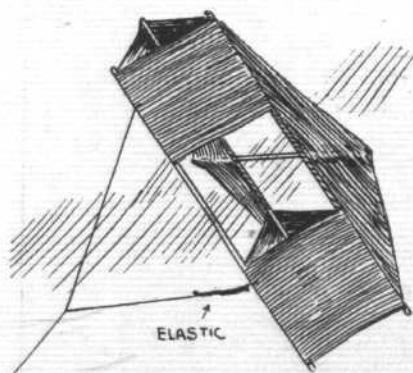


"Flight" Copyright Photo.

Secretary Akehurst (holding line), of the K.F.A., and Major Baden-Powell, the President.

under such conditions as make it reasonably easy for him to perform his appointed task. And in both cases stability implies a high degree of automatic action, and not merely that which results from a skilful hand on the string.

This point among others was exemplified on Saturday, for among the competing devices were two kites of a type with which many extraordinary manoeuvres can be carried out by those skilled in their manipulation, of which, it may be remarked, not the least difficult is keeping the kite still. This latter performance was, to an extent, successfully accomplished by one competitor, but not by the other, but even in the former case the stability was not of that steady-as-a-rock variety which seemed to characterise some of the heavier modified box-type kites, which would remain up aloft for a comparatively indefinite period just as if they were hanging from a string instead of *vice versa*.

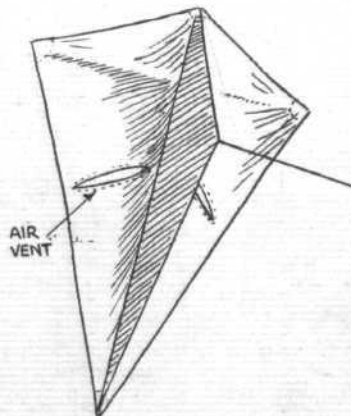


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One of Gamage's scout kites, showing the position of the elastic in the bridle.

Importance of Stability.

Stability in a kite is of importance both for meteorological work, where the kite has to carry recording instruments of some delicacy, and for man-lifting purposes, where it has to maintain an observer in the air.

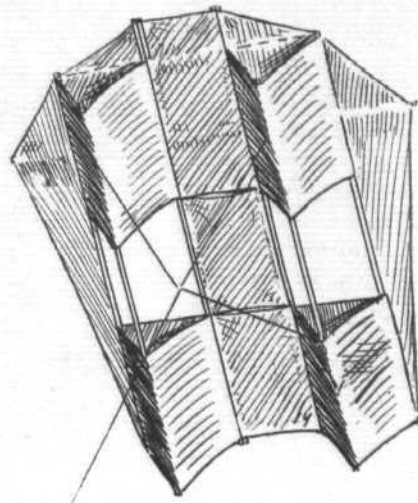


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The "Finbat" war kite, the features of which are a keel and two air vents.

Box-Kites with Fins.

In referring to box-kites, it was an interesting and noticeable fact that there was hardly a simple box-kite in use, every kite embodying this principle being modified more or less by the addition of some form of extension, which may range from a pair of diagonal fins, as in Mr. W. Barton's kite, which won the first prize, or a complete set of four fins, as in Messrs. Gamage's quadruplane, to a kite like the Brookkite, in which the box-member is triangular in section and quite small in comparison to the surface area as a whole. All these kites can be made to possess great automatic stability, and many useful purposes may be performed with them in consequence, not the least practical of which is the use which has latterly been made of kites for the holding aloft of advertising banners. Throughout the afternoon, for example, the Kite-Flying Association themselves had their banner thus wafted in the breeze, as a land mark.



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Second Prize. The Brookkite, one of the largest in the competition.

The String and the Bridle.

Proceedings commenced early in the afternoon with the staking out of an enclosure, wherein competitors were supposed to be comparatively free from the spectators, whose too close proximity is apt to have rather annoying consequences before the general muddle of kite-string and clothing which often ensues therefrom is disentangled. On the whole, perhaps, the allowance in respect to space



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Major Baden-Powell (on right) and Col. Fullerton, the Judges at the Kite-Flying Association's Meeting.



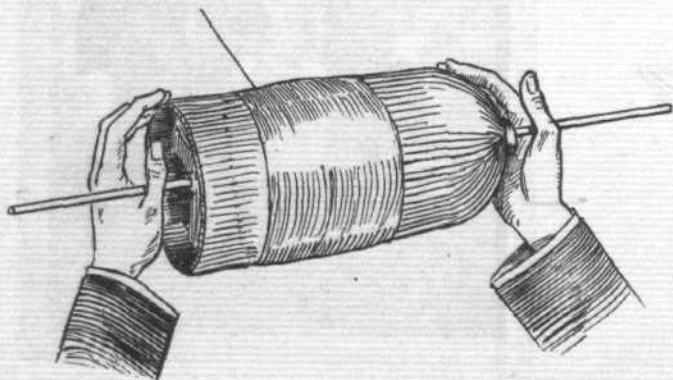
"Flight" Copyright Photo.

Frank Slatter, the youngest boy scout, and his "Scout" kite.

was hardly liberal enough, but details of organisation such as these can only be gained by long experience. The first operation, so far as the competitors were concerned, was the measuring off of the prescribed 200 yards of string, each competitor being, of course, expected to bring his own cord. Some of the kites, it was observed, had a strip of elastic or a spring fitted in the bridle, to give a certain amount of automatic regulation of attitude under variations of wind pressure when the kite is aloft. The attachment of the bridle and the "steepness" at which it is braced constitutes the ruling factor, or one of the ruling factors, if the design of the kite itself is taken into consideration, in the normal position at which the kite flies under given conditions, and those who employ the elastic bridle-piece consider that they can secure automatic stability therewith under conditions which would not otherwise be possible.

Winding-in.

Hardly less interesting than the kites themselves were the various devices used by the competitors as reels for holding the string. In only one or two instances was the simple old-fashioned square frame considered adequate to the occasion. Several of the competitors employed a cylindrical drum having a hemi-spherical end which some of them were able to wind, by a flick of the fingers, with



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A winding spool, showing how it is held. The position of the cord should be noted as the winding up is performed by a flicking action of the right hand in a downward direction.

great dexterity. Another, who evidently regarded kite-flying as an essentially mild form of sport, had a winch rigged up on the back of a folding chair, on which he could enjoy a peaceful hour or more if need be with the post-prandial pipe.

It would be unfair to suggest that the day was far short of perfection, for the wind was decidedly fresh and had just that occasional kick in it which the officials desired, even if the competitors had been content without. After the kites had remained aloft for an hour, the order was given to haul them down, and the judges then proceeded to allot marks for weight and portability. Most of the larger kites were ingeniously constructed with detachable stretchers of wood or bamboo, so that they could be either folded or rolled up into a small compass. During the actual trial, observations were made to determine the relative heights of the kites by measuring their angles to the horizontal at the anchorage of the string, and this factor, together with the others mentioned, constituted a system of marking on which the handsome trophy presented by Major Baden-Powell, the President of the Association, was awarded. The prize went to the highest aggregate marks, and was won by Mr. W. Barton, a veteran kite-flyer over seventy years of age, who is to be congratulated, not only in having won the prize, but in having made his own kite in the first instance.

KITE-FLYING—OFFICIAL RESULTS.

Judges.—Major Baden-Powell, Col. Fullerton, Mr. C. Brodgen, and Mr. W. Bovill.

Place.	Kite.			Marks.					
	Competitor.	Make.	Type.	Area.	Angle.	Stability.	Portability.	Construction.	Total.
1	W. Barton	Owner	Box and fin	34	20	18.6	7	9	54.6
2	Brooke and Gilman	Brooke	Brookite ...	58	19	16.6	8.5	9	53.1
3	W. Jones ...	Gamage	Quadruplane	43	15	16	9	8	48
4	A. Brown	—	Burmah ...	55	12	18	8.5	8.5	47
5	H. Hughes	—	Indian ...	7	10	14	8	7.5	39.5
6	Major Fink	—	" ...	1	13	10	3	4	30



"Flight" Copyright Photo.

"Spooling" at the Kite-Flying Association's Meeting.

AERO CLUB OF THE UNITED KINGDOM.

OFFICIAL NOTICES TO MEMBERS.

Fixtures for 1909.

July 10	...	Balloon Race, Hurlingham Club (Challenge Cup presented by Mr. F. Hedges Butler).
July 17	...	"Hare-and-Hounds" Balloon Race, Hurlingham Club (Cup presented by the Hon. C. S. Rolls).
August 28	...	Gordon-Bennett Aviation Cup, Rheims.
October 3	...	Gordon-Bennett Balloon Race, Zurich.

Committee Meeting.

A meeting of the Committee was held on Tuesday, the 6th inst., when there were present: Mr. Roger W. Wallace, K.C., in the chair, Mr. Griffith Brewer, Mr. Ernest C. Bucknall, Mr. Martin Dale, Mr. John Dunville, Prof. A. K. Huntington, Mr. V. Ker-Seymer, Mr. J. T. C. Moore-Brabazon, Mr. C. F. Pollock, Hon. C. S. Rolls, Mr. Stanley Spooner, H. E. Perrin (Secretary).

New Members.—The following new Members were elected:—

W. W. Brownjohn.	A. Preston Hohler.
Sir A. Conan Doyle.	Capt. John Spottiswoode.
Douglas Hall.	

Balloon Race, Hurlingham.

This balloon race, which takes place at the Hurlingham Club, Fulham, S.W., to-day, will start at 2.30 instead of 3.30, as previously announced.

Members of the Aero Club will be admitted to the Hurlingham Club free on presentation of their Aero Club Membership Cards.

The following balloons will take part:—

Competitor.	Balloon.	Pilot.
1. John Dunville ...	Banshee ..	John Dunville
2. Ernest C. Bucknall ...	Enchantress	Ernest C. Bucknall
3. Hon. C. S. Rolls ...	Hanover II	Hon. C. S. Rolls
4. C. A. Moreing ...	Thistledown	Maj. Baden-Powell
5. B. H. Barrington Kennett	Comet ...	B. H. Barrington Kennett
6. Col. J. E. Capper, C.B., R.E.	Pegasus ...	Col. J. E. Capper, C.B., R.E.
7. Griffith Brewer ...	Lotus ...	Griffith Brewer
8. Hon. Mrs. Assheton Harbord	Valkyrie ...	C. F. Pollock
9. A. M. Singer ...	Satellite ...	A. M. Singer
10. Maj. Sir A. Bannerman, Bart., R.E.	Aero Club IV	Maj. Sir A. Bannerman, Bart., R.E.

Shellbeach Flying Ground.

Erection of Sheds.—Members wishing to erect sheds at Shellbeach are requested to apply to the Secretary, who will supply all information. Six sheds have been erected there, and the flying machines which are now being constructed will be ready for experiments in the course of the next few weeks.

Members visiting the grounds are requested to have with them their membership cards, as strict instructions have been given to admit only Members to the flying ground.

Aero Club League.

Members of the Aero Club League are admitted to the flying ground of the Aero Club at Shellbeach on presentation of their membership cards.

The following reduced fares have been arranged with the railway company:—

1st Class return.	2nd Class return.	3rd Class return.
8s.	6s. 6d.	5s.

Tickets will be available for one month from date of issue.

Members desiring to avail themselves of these reduced fares are required to produce vouchers at the booking

offices. Vouchers can be obtained from the Secretary of the Aero Club.

Trains leave Victoria, Holborn, or St. Paul's.

For the convenience of members, the best train is the 9.45 a.m. from Victoria, arriving at Queenborough 10.55. At Queenborough change to the Sheppey Light Railway for Leysdown (Shellbeach), which is $\frac{3}{4}$ -mile from the flying ground.

"Hare-and-Hounds" Race (for Cup presented by the Hon. C. S. Rolls).

This race will take place at the Hurlingham Club, Fulham, S.W., on Saturday, July 17th, 1909, at 3.30 p.m. Members desiring to compete are requested to advise the Secretary on or before July 13th, 1909. Entrance fee, 10s.

Open to members of the Aero Club of the United Kingdom.

The following rules will govern the competition:—

1. This race will be of the nature of a "hare-and-hounds" race, i.e., the competitors in their balloons will chase another balloon, and the winner will be the competitor who lands nearest to this balloon.

2. There is no restriction as to the size of balloon, or number of passengers carried.

3. A proper anchor and trail rope must be taken, and may not be dispensed with at any time.

4. Competitors are required on landing to properly fill in a landing certificate, which must be obtained from the Secretary beforehand, and this certificate should contain such full particulars as will enable the Committee to easily locate on an ordnance map of half-an-inch to the mile the exact point at which the final descent was made.

The landing certificate must be signed as correct by the competitor and others (if any) accompanying him, and two responsible persons present at the time of final descent, and must be sent in to the Secretary within seven days.

5. Competing aerostats may not be dragged, except at the final descent for convenience in packing; in the latter case the distance for the purpose of the competition will be measured only up to the point at which such dragging commenced.

6. A competitor by entering thereby agrees to accept responsibility for damage done by his balloon, or the occupants, and to indemnify the Aero Club of the United Kingdom and the Hurlingham Club in respect thereof.

7. The Aero Club streamer must be attached to each balloon.

8. The Committee of the Aero Club will have power to cancel or postpone the event, owing to weather conditions or other cause.

9. A competitor by entering agrees to be bound by these rules, and a competitor who does not strictly comply with the rules will be liable to disqualification.

10. The decision of the Committee of the Aero Club of the United Kingdom in all matters of dispute, or as to the interpretation of these rules, will be final.

The Club balloon, "Aero Club IV," will follow the race. Members wishing to make the ascent are requested to notify the Secretary at once. The fee will be £5 per person, and the three seats available will be allotted in order of application.

Members of the Aero Club will be admitted to the Hurlingham Club free on presentation of their Aero Club membership cards.

International Balloon Race at Brussels.

An International balloon race organised by the Aero Club of Belgium will take place at Brussels on July 21st, 1909. Full particulars can be obtained on application to the Secretary.

HAROLD E. PERRIN, Secretary.

The Aero Club of the United Kingdom,
166, Piccadilly, W.

NEWS OF THE WEEK.

Bleriot Flies for Nearly an Hour.

SINCE the first day of the month, M. Bleriot has had a pretty busy time. He has flown on various days in no less than three different aerodromes, on Sunday putting up a new record for himself, and coming very near to beating all French records. It was at the fête at the Juvisy aerodrome which had been organised on behalf of the sufferers by the recent Midi earthquake that M. Bleriot made his splendid flight upon his baby monoplane "No. 11." He covered the first three kiloms. in 3 mins. 59½ secs., passing over a line of ballonettes at a height of 15 metres on each round. He continued his flight, varying his altitude between 5 and 25 metres, and seemed to have the French records well within his grasp, when the old trouble cropped up again — his petrol supply gave out — and he was obliged to land after a magnificent flight which had lasted for 50 mins. 8 secs.

He was, of course, awarded the Mme. Edmond Archdeacon 1,000 francs prize for the longest distance flown at Port Aviation on that day. A crowd of at least 10,000 witnessed the flight. Only just previously to the start rain had fallen very heavily, and after M. Bleriot had made one or two circuits a very fine rainbow appeared across the sky, a good omen which for once carried out its promise.

During the later part of this week M. Bleriot proposed to fly across country from Etampes to Artenay—a bagatelle of about 40 kiloms.—and afterwards from Douai to Arras and back.

Bleriot at Issy and Douai.

AFTER having made several flights at Douai, M. Bleriot returned to Issy on the 30th ult. to make further experiments with his No. 11 monoplane, with a view to beating the French records. The wind, however, was too strong for success, whilst, in addition, lubrication troubles developed. After getting matters put right at the Clement workshop, M. Bleriot made four turns of the parade ground in 6 mins. 11 secs. On the 2nd inst. he was back at Douai, and on his No. 12 monoplane made a flight lasting about 20 minutes, he maintaining a good altitude, his course being quite outside the boundaries of the Brazelle aerodrome. He intended continuing longer, but the motor commenced missfiring, which made him decide to come down. Just previously he had won the Corderie prize, by flying for 15 kiloms. in a closed circuit. On the following day M. Bleriot was again hard at work, and ascending in the morning he steered straight for the belfry at Douai, 3 kiloms. away from the Brayelle aerodrome. Rounding this with an easy curve, M. Bleriot flew back and landed gracefully in the aerodrome without incident. In the afternoon he again took the air with the intention of attacking records. After covering 23 circuits, equal to 47·277 kiloms.,

in 47 mins. 17 secs., he was obliged to descend owing to a slight derangement with his motor, and so his hopes of securing the French records were once more doomed to disappointment.



How the inhabitants of Dayton, Ohio, decorated their town for the ceremonies on June 17 and 18 for the festivities organised in honour of the homecoming of the Wright Brothers.

Cross-Channel Flying.

PROBABLY no better spot on the French coast could have been chosen by Mr. Latham for "jumping off" than the one selected at Sangatte, near Calais, where the old Channel Tunnel works are as if made for the purpose. There, during the week, he has been re-erecting his monoplane and laying his plans for the trip, which may be attempted during the next ten days. It has been stated that the machine would be ready yesterday afternoon, and that Mr. Latham would start flying to-day, Saturday, but this is a somewhat optimistic view. When he does start it will be from the top of a cliff about 300 ft. high, and he hopes to keep at a good height all the way across. By order of the Minister of Marine, the torpedo boats attached to Dunkirk and Calais will follow Mr. Latham in case of emergency, and, as we announced last week, a number of cruising motor boats belonging to members of the British Motor Boat Club will also render aid if necessary.

At Wissant, Comte Lambert has got his shed ready, but as late as Wednesday evening neither the Count nor his flyer had arrived, although they were expected that day. Unlike Mr. Latham, Comte Lambert will start practically from sea level.

Apparently the reports that Mr. Henry Farman has entered for the Channel flight have very little authority in fact, and although he recently visited Boulogne, it was not with a view to making arrangements for cross-Channel flying.

Another Double Passenger Record.

THAT youngest of successful aviators, M. Gobron, has made yet another sensational performance at Chalons. On the 2nd inst., after making a trial flight of about eight minutes, he landed and took on board Madame Colliex and M. d'Almeida. With these two he flew for five minutes, at a height of about 5 metres. Should this

aviator take part in the Rheims meeting there should be an exciting tussle between him and M. Bleriot for the passenger carrying prize.

M. Paulhan Flies.

"Slow but sure" is the motto of M. Paulhan, who has been practising on his Voisin biplane at Issy, and for some days last week he contented himself by making several "jumps" in order to familiarise himself with the handling of the machine. On Saturday, after several short flights of about 200 metres in length, he decided upon a more extended flight and made not quite five circuits of the grounds, amounting to about eight kiloms., the altitude not being very great, varying between two and five metres. He then gave notice to the Aero Club that he would make an attempt on Monday to win one of the 500-metre prizes, but unfortunately some trouble was experienced with the motor, and although the machine made several short jumps, it did not keep going sufficiently long to cover the course. M. Paulhan is, however, very well pleased with his progress, and is now at Douai, where he intends to take part in some of the competitions there.

Curtiss to Fly at Rheims.

It is now officially announced that America will be represented at the Gordon-Bennett Aviation Cup contest at Rheims on August 28th by Mr. Glenn H. Curtiss, whose flyer was fully described and illustrated in last week's *FLIGHT*. Mr. Cortlandt F. Bishop, the President of the American Aero Club, at present in France, was at Rheims recently arranging for the reception of Mr. Curtiss and his flyer, whose arrival is expected in about a fortnight. Before being returned to America the Curtiss flyer will be on view at the Aeronautic Salon in the Grand Palais next October.

Lieut. Calderara at Work Again in Italy.

HAVING entirely recovered from the effects of the accident which occurred while manœuvring his Wright flyer, Lieut. Calderara arrived at Centocelle at the end of last week and recommenced flying. After making several trial runs of about 100 metres, he flew for forty minutes and showed that his accident had not affected his nerve or his ability to control the machine. He also flew round the Centocelle ground four times on Monday last.

M. Delagrange Completing his Lessons.

HAVING completed his demonstration flights in Holland, Comte Lambert returned to Juvisy at the end of last week and immediately set to work to complete M. Delagrange's education in the art of manipulating the Wright flyer. M. Delagrange wishes to become thoroughly familiar with the Wright machine in order that he may make an attempt to cross the Channel thereon. On Monday Comte Lambert made several short flights, accompanied by his son.

At Chalons.

MR. COCKBURN, who has been experimenting with a Farman machine at Chalons for some time, made a very good flight on Monday, but unfortunately he had a slight accident at its conclusion. He came to the ground rather suddenly and damaged the left wing of his machine. It is to be hoped that this persevering British aviator will meet increasing success in future, as there is a possibility that he may be one of the team to represent Great Britain in the Gordon-Bennett Aviation Cup contest at Rheims.

On the same day, at Chalons, M. Sommer, on a similar Farman machine, made a flight lasting half-an-hour.

At Juvisy.

In addition to the fine flight of M. Bleriot, M. de Rue was flying at Juvisy on Sunday last and incidentally carried off the second Le Gatinerie prize of 2,500 francs by covering the 3 kiloms. in 3 mins. 47 secs., passing each time over the line of ballonnettes placed at a height of 15 metres. His time was a little over 12 secs. better than that of Bleriot.

Other items on the programme were a motor car gymkhana event, an ascent in a Montgolfier balloon by a youth of 16, and a series of demonstrations with the Bonnet-Labranche glider towed by a motor car.

A New Triplane.

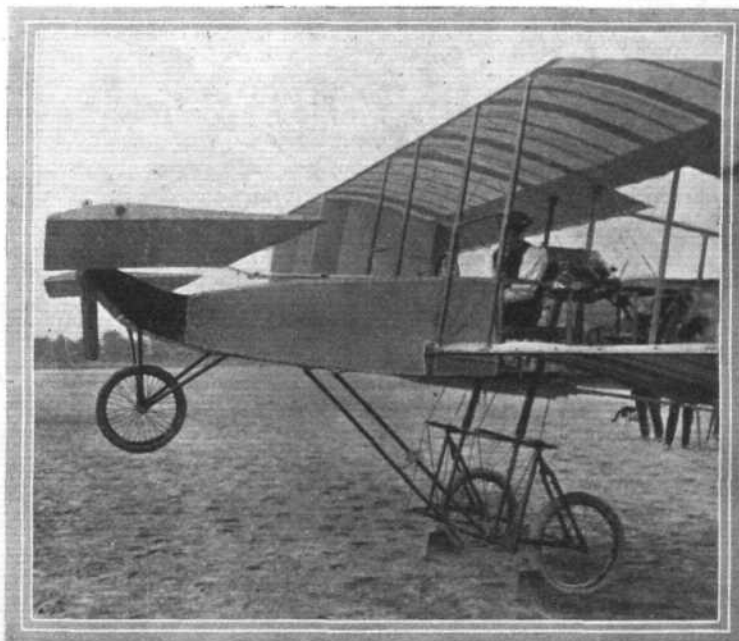
In a few days, experiments will be commenced at the Montfuron military camp, near Marseilles, with a triplane which has been built by M. Gilly. It has a span of 16 metres, the lifting surface totalling to 100 square metres. Two propellers are provided, driven from one motor of 100-h.p. The machine will be piloted by M. Geurcin during the initial flights.

The President to visit Rheims.

At the beginning of the week President Fallières received a deputation from the Committee in charge of the aviation meeting at Rheims, and after having the arrangements outlined to him he decided to confer his patronage upon the meeting. He also promised to pay an unofficial visit to the flying ground some time while the competitions are in progress.

Vichy Aero Meeting.

FOR the aero meeting which is announced to take place at Vichy from the 18th to the 25th inst., a sum of 30,000 francs is offered in four competitions. These are the Ville de Vichy prize of 16,000 francs, divided into four prizes of 10,000, 3,000, 2,000, and 1,000 francs, for a speed contest over a course of 20 kiloms.; three



Voisin biplane upon which M. Paulhan effected his flights last week, showing at close quarters the elevators and the extra wheel which has been fitted to the nose of the machine. The motor employed by M. Paulhan is a 50-h.p. Gnome.

prizes of 2,000, 1,000, and 500 francs for the best speeds over one circuit of the 1,666 kiloms. course; two prizes of 4,000 and 2,000 francs for the two machines which make the best speeds over a triangular course of 4 kiloms. outside the aerodrome, and the passenger prizes of 2,500, 1,500 and 500 francs for the three machines which make three circuits of the 1,666 kilom. course, carrying, in addition to the pilot, the greatest number of passengers, who must weigh at least 65 kilogs. each. On each day during the week attempts are to be made for one or other of these prizes.

Competitions for Student Gliders.

IN connection with the School founded by the Aeronautique Club of France, the Commission d'Aviation of that body have decided to organise a series of monthly competitions among the pupils for gliding flights. The tests will be carried out on the glider belonging to the School at the Champlain-Palaiseau Park.

Competitions at Frankfort.

IN connection with the Exhibition at Frankfort, which opens to-day, Saturday, 14 competitions have been organised, for which prizes to a value of about £10,000 are offered. The competitions are for (1) Aeroplanes; (2) Aeroplane models; (3) Dirigibles; (4) Dirigible motors; (5) Propellers; (6) Free balloons; (7) Rubber balloons; (8) Balloon photography; (9) Carrier pigeons; (10) Light metal; (11) Dirigible garages; (12) Aeronautical astronomy; (13) Lighting cars of dirigibles; (14) Cinematograph views of flight of birds.

Only One Aeronautic Salon this Year.

IT is now definite that the Aeronautic Salon which is to be held at the Grand Palais from September 18th to October 3rd, will not be followed by a rival show, as at a recent meeting of the A.C. de France, M. Gustave Rives formally announced that there would be no Salon this year, but that for 1910 the Club will organise an exhibition of automobiles, flying machines, cycles, and sports.

Paris Aviation Show.

M. FALLIÈRES, the President of the French Republic, has accorded his patronage to the Salon which is to be held at the Grand Palais from September 18th to October 3rd. Official support is also being given by the French Ministers of Foreign Affairs, War, Marine, Education, Public Works, Commerce and Colonies, and the chief municipal officials of Paris are lending their assistance as well.

A New Belgian Flyer.

TRIALS will shortly be commenced at Herbaye Plains, about 21 kiloms. from Liege, with a biplane somewhat resembling the Wright flyer, which has been built by the Chevalier Louis de Laminne. It is fitted with a 60-h.p. Vivinus engine, and weighs complete, with the aviator on board, about 500 kilogs.

Wright Brothers' Progress in U.S.A.

AFTER their unsatisfactory experiences in the early part of last week, as recorded in last week's FLIGHT, the Wright Brothers apparently got at the root of the trouble, for on Thursday week, Orville Wright made three fairly long flights. Each time he circled the Fort Myer parade ground nine times, a total distance of about six miles, which was completed on the second flight in 7 mins. 59 secs. The next evening he also made some fine flights, but unfortunately had a slight mishap with

the machine. After a first flight, during which he made fifteen turns of the ground, he went up again, and after nine circuits the engine suddenly stopped. Orville had complete control over the machine, but, owing to a tree being in the way, he had to make a rapid descent, and in doing so the skids and one of the planes were considerably damaged. Repairs, however, are being quickly executed, and the experiments will be continued as soon as possible.

Curtiss Wins a Prize.

ON Monday evening at Morris Park, New York, Curtiss on his biplane made a flight of not quite 2 miles in length. He circled round the park twice, and easily won the trophy offered by the President of the American Aero Club for a flight of a kilometre.

Flyers in Japan and Roumania.

ALTHOUGH it is difficult to get reliable information on the subject owing to secrecy with which experiments are conducted, it appears that several aeroplanes have been built and tried with more or less success in Japan. One of the most successful is that of Yoshino-Suke Takaska, which, it is said, has attained a speed of 50 miles an hour.

Roumania is another country in which endeavours are being made to solve the question of flight. Lieut. Goliescu has built a monoplane which somewhat resembles a huge eagle, and in his experiments at Bucharest he has succeeded in making short flights, although the speed has been very low.

"Zeppelin I" Reaches Metz.

IT was the evening of Saturday last before the elements had abated sufficiently for the journey to Metz to be continued by "Zeppelin I." During the four days she had been anchored at Biberach, the infantry guard had had an anxious time, and repeatedly the whole number of 150 men had to hang on in order to prevent her being blown away. The heavy rain soaked into the envelope, weighting the great vessel down, and a good deal of gas escaped, so that Capt. Sperling had to wait until the outer covering fabric dried, and fresh supplies of gas arrived. On Saturday evening, about 11 o'clock, the weather cleared, and all being ready the airship set off again for Metz. Shortly after midnight the craft circled round Ulm Cathedral, and then was headed for Goppingen, and so on to Stuttgart, which was reached about 10 minutes to 2. Karlsruhe was passed at 3.45 a.m., Bitsch at 5 a.m., and the airship finally reached Metz, its destination, at 12 minutes past 8, being enthusiastically greeted by a large crowd of people, two battalions of soldiers being required to keep the landing ground clear.

In a statement issued while the airship was still at Biberach, Count Zeppelin points out that "Zeppelin I" is nearly four years old, and although the covering has proved insufficiently waterproof to withstand very heavy rain, ordinary showers have not previously affected it to any extent. "Zeppelin II" has, however, proved that she has nothing to fear from heavy rain, and is altogether more efficient. He claims that this latest experience with "Zeppelin I" has shown that a rigid airship would require no garage in warfare, being, in fact, a very welcome test under campaigning conditions.

A Zeppelin Polar Expedition.

AT the end of last week, Prof. Hergesell, who has been largely connected with Count Zeppelin in his

experiments, laid before the Kaiser a scheme which has been drawn up for exploring during next year unknown Arctic regions by the aid of a Zeppelin airship. It is proposed to build the biggest dirigible yet designed, and to take it under its own power to Cross Bay, on the west coast of Spitzbergen, which has been decided upon as the base for the expedition. From there, trips will be made with the object of exploring the unknown regions of the North of Greenland and Francis Joseph Bay. Probably no attempt will be made to reach the North Pole. The Kaiser is keenly interested in the project, and has promised to accord his patronage to it.

"Parseval III" Carries Eight Passengers.

ON Saturday last a trial of several hours was made with "Parseval III" in the neighbourhood of Dessau, during which there were eight passengers on board.

Brussels to Paris by Airship.

SOME time ago M. Clement expressed a desire to go from Paris to Brussels by airship, and now there is talk of the journey being made in the reverse direction by M. Goldschmidt in the Belgian dirigible. So successful have been the trials in connection with his new dirigible, "Belgique," that he contemplates making the trip between the Belgian and French capitals.

A Balloon Chase.

HAYWARDS HEATH, on Saturday last, was the starting place of an "hare-and-hounds" race organised by the Sussex A.C. The Hon. C. S. Rolls, in his balloon, "Imp," was the hare, and at the start a strong wind was blowing from the south-west, and carried the balloon to Paddock Wood, 24 miles away. The first to reach Mr. Rolls was Mr. Moore (15-h.p. Humber), and he thus won the President's bowl. Second and third prizes were secured by Mr. Godwyn King and Mr. Townsend respectively.

NATIONAL AIRSHIP FUND.

ON Wednesday afternoon the Advisory Committee to the National Airship Fund had a consultation with General Sir Charles Hadden, regarding the practical requirement which will have to be satisfied by the airship which is to be purchased with the fund initiated by the *Morning Post*. Earl Roberts presided at the meeting, which was attended by Mr. Edward Frost

(Aeronautical Society), Mr. Roger Wallace, K.C. (Aero Club), Col. H. S. Massy (Aerial League), Countess Bathurst, Col. Maxse, editor of the *Morning Post*, and Mr. H. Massac Buist. The decisions of the committee are not to be published for the present. The fund is steadily growing, and if a few more large donations are forthcoming, the required total of £20,000 should be soon realised.

SPLINTER-PROOF CLOTHING FOR AVIATORS.

MR. HUBERT LATHAM, who has been making such extraordinary progress with his monoplane, draws attention in a breezy little contribution, which he recently made to our contemporary the *Daily Mail*, to a simple precaution that he is in the habit of taking against personal injury in the event of accidents which more or less break up his machine. He has come to the conclusion, and it is one which receives considerable support from the practical experience of other aviators besides himself, that the pilot as a whole is comparatively safe from damage in the event of an accident, because so much of the machine has to be crumpled up before he is brought into actual contact with *terra firma*.

On the other hand, with timber-built frames such as are commonly employed in aeroplane construction, there is some risk of splinters breaking off and penetrating through cushions and clothing with somewhat unpleasant results, and it is with the object of guarding as far as possible against a mishap from this cause that Mr. Latham has adopted the practice of wearing a special suit made of fabric which is employed by those who indulge in the

pastime of fencing. Although it is hardly likely to give absolute immunity it is certainly a happy idea, for there is no doubt that it would give a considerable amount of protection against those apparently trivial wounds which are so apt to have disproportionately serious results, and even at the best may cause a most annoying delay in the sequence of experiments.

There are several varieties of material worn by those who practise fencing, but from personal experience in this pastime we could only recommend the very best of that which is used by those engaging in *épée* competitions with the *pointe d'arrêt*, where the sword is fitted with a sharpened point projecting about 2 mm. from the button. This fabric, as may be imagined, has to withstand some fairly rough usage, and is not easily torn. Being canvas lined, it is naturally rather inclined to be stiff, but when it has been properly washed once or twice it becomes quite comfortably supple. As it is not, perhaps, easily obtained out of a school of arms, we shall be very pleased to assist any of our readers who may feel inclined to follow Mr. Latham's example in procuring the right material.

CLOCKWORK MOTORS FOR MODELS.

As the direct result of a letter which appeared in our correspondence columns a few weeks ago, we have been continually bombarded with letters from readers of FLIGHT asking for further information concerning an efficient clockwork motor suitable for model flyers. Unfortunately, it appears that the writer of the letter in question was somewhat premature in the statement to which he committed himself, for we learn that the particular motor in question is not yet sufficiently

developed to be supplied to would-be users. So great has been the correspondence received by us upon this subject, continuing day after day, with but little sign of abatement, that in our own interests, as well as those of readers, we must earnestly beg that no further letters about these motors are sent in to us. In due course, when everything is ready, the makers will doubtless publish an announcement of the fact in the usual way and in the customary columns of this journal.

PARAFFIN MOTORS FOR AEROPLANES.

By R. OWEN ALLSOP.

THE marine motorist, with a petrol fire aboard, may be well said to be "Between the devil and the deep sea." What, then, is the position of the unfortunate aeronaut caught aloft with a conflagration of inflammable spirit?

Can heavy oil engines be utilised for aeronautical purposes? As a rule the paraffin motor weighs more than the petrol engine, in many cases considerably more. No great objection can be raised to a little extra weight on a car, but it is evident that every ounce added to the engine of an airship or aeroplane means so much hindrance to successful flight.

We are of the opinion that specially-designed aero engines operating with heavy oil are now possible—within the range of experienced and ingenious designers. Many paraffin carburettors add but little weight to an ordinary petrol engine. Such devices are for the moment put out of the running for aeronautical purposes, by reason of the tendency to design special aero engines. It is, therefore, necessary for the carburettor designers to turn their attention to these specially-designed engines, and to produce specially-adapted heavy oil carburettors.

The oil engine inventor may take heart in this matter. If the fundamentals of the problem are examined in the light of known facts concerning heavy oil carburation and combustion, there is much to encourage designers. For one thing, the question of exhaust, that estops so many endeavours in paraffin automotor problems, need not greatly concern the aeroplane engine. Again, the action of vaporisation *inside a cylinder* acts to cool such cylinder walls. The main practical deduction from these premises is that elaborate arrangements, adding weight to the high-speed internal combustion engine, and designed to produce perfect exhaust, are not of necessity required for aeronautical engines. There is a further encouraging point concerning the oil engine: it is an observed fact that imperfect exhaust is not inconsistent with power and a certain measure of economy. Armed with these facts, the would-be designer of a heavy oil engine of sufficiently low weight, per horse-power developed, to allow of its practical use aloft, may approach the problem with a very considerable amount of confidence.

Among other evident results of the cooling effect of vaporisation, when carried out within the motor cylinder, it can be seen that reasonable justification exists for the assumption that the designer may possibly *do without a wall-jacket*, relying upon air cooling plus the cooling effect of evaporation. This is an important point. The weight of jacket, pipes, circulating-pump, and tank or radiator, is evidently a serious item, however light be their design and construction, and this not to mention the weight of the cooling water itself.

The added weight of the paraffin motor usually results from either one or the other of certain adjuncts, the designed function of which is as perfect an exhaust as can be produced under road-engine conditions—an oil-pump, an air-pump, a vapour-pump, a heater, atomiser, or vaporiser, all with their pipe and flange, and other connections. All this means weight—not, perhaps, always serious in automotor work, where the weight bogey has been much thrust into the teeth of inventors, but of real serious import on an airship.

The main fact that the designer (of an adventurous spirit) of a paraffin aero engine will do well to keep

before him, is that an engine may be made to run and run well, and with quite reasonable economy, where the elementary arrangements for carburation are nothing more elaborate than a fine spray supplied direct through a rudimentary exhaust-heated vaporiser into the working cylinder. An examination of the main features of any ordinary type of paraffin carburettor will demonstrate this. The objection for motor car purposes is that the condition of varying piston speed, as a reflex action of varying load, causes bad exhaust intervals on a general exhaust that leaves something to be desired. But we have seen that the exhaust question has less importance in aero work. And there is yet another point to encourage inventors: the work of the engine of an airship or aeroplane is on constant load, or at least under a load not varying more than that on a marine engine. There will, therefore, not be the same tendency to a foul exhaust, for a quite simple design of engine may be produced that a constant load and approximately constant piston-speed will give an exhaust which, if somewhat odorous, presents little to the eye in the way of visible smoke.

Engines of this kind, especially where taking in a charge containing much liquid fuel, that is, unvaporised spray, do not convey much heat to the water-jacket, and the reason for this must be adjudged to be that the walls, heated on the expansion stroke, lose some measure of this heat by reason of the work done on the fuel, during charging and compression, to originate and maintain the state and condition of vapour. This indicates one basis of design for the aero-engine inventor—to utilise the heat of explosion *inside the cylinder*, with as little added weight to the engine as may be possible. Success can, and has been, attained in this way, if we accept the question of weight; for it must be allowed that stationary engines utilising intra-cylinder vaporisation have been consistently heavy in design and construction. Much thought and invention are required, but we see no vital obstacle to the production—or, at any rate, to the main idea—of engines on this fundamental plan of internal vaporisation.

A great obstacle to general idea we have in mind is the fouling of spark plugs. The less vaporised the heavy oil charge—the more liquid the fuel—the greater the difficulty with electric ignition; but it may be instructive to recall the fact that the mixture in many satisfactory electric-fired stationary engines has been so "wet" that nothing has been used for cylinder lubrication beyond the petroleum thrown on the walls during compression. Most internally-vaporising oil engines have been fired by hot-tube or by "automatic" ignition, a plan that does away with the difficulty of plug-fouling in engines having an exceeding wet vapour supply. But in all vertical cylinder motors there are positions in the combustion chamber of varying degrees of suitability for locating a sparking plug. The driest, and that most shielded from spray and from direct contact with the entering wet vaporous charge, is the best position.

Thin, cast-steel cylinders will suit the ideas herein generally suggested. A thin wall heats up less and suits the system of air-cooling. Delicately designed, steel flanged cylinders and light cast-iron pistons, finding favour in petrol aero work, are indicated for heavy oil motors for similar (aero) duty. The relation between wall surface and combustion head and the design of this latter, to

maintain equilibrium or heat balance during the cycle, must be a matter of much thought and consideration of the vaporising and combustion problem.

The above generally sketched outline of a possible heavy oil aero engine may provide food for thought for

the experience in heavy oil matters. We recommend the ideas with every caution to the inexperienced, and intend them for the information of those bold spirits, who, aware of what experimenting with paraffin means, are yet prepared to adventure something further.



AN EARLY IDEA IN AIRSHIPS.

THE ROZE AEROPLANE-AIRSHIP-HELICOPTER-PARACHUTE-BOAT.

AMONG early airships none was more completely unorthodox than the Roze machine, which employed, among other novelties, two gas-vessels side by side and an aeroplane overhead. The following description of it is reprinted from the *Automotor Journal* of January, 1901. The airship was not successful.

"This candidate for the Henry Deutsch prize for dirigible balloons consists essentially of two balloons of the usual fat cigar-shaped type. Each is about 140 ft. long by 22 ft. in greatest diameter; they are connected by a tube in order to ensure equilibrium.

"The car, which is enclosed, is made of wood and aluminium with a canvas roof. The motors are on the upper floor, beneath the roof, with the seats for eight passengers below.

"It is stated that 20-h.p. will be supplied by petrol engines, and that of this 10-h.p. will be used for lifting by means of two screws, while the other 10-h.p. is for propulsion. The weight is over 3 tons.



A FLIGHT SCHOOL FOR PORTSMOUTH.

It is perhaps hardly surprising that the great naval centres are taking a more than ordinary interest in the progress of flight. At Portsmouth a very active branch of the Aerial League has been formed, and promises to do a good deal of useful work, in which it will be considerably aided by the substantial help given by Mr. Patrick Y. Alexander towards founding a technical school of aeronautics. This, it is proposed, shall be the headquarters of the Southern Division of the Aerial League, and full particulars regarding the proposal can be obtained from Capt. F. W. Marriott, 48, Palmerston Road, Southsea.



CORRESPONDENCE.

* * *The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.*

PROPELLERS.

To the Editor of FLIGHT.

SIR,—I wish to say how very pleased I was with the article in FLIGHT, July 3rd, by Mr. John Squires.

A great deal of controversy, much of it useless, has been, and is still going on in your columns with regard to the merits of different propellers, and the article should show some of the correspondents the erroneous conclusions they have arrived at on the subject. Personally I shall welcome with great pleasure a further article as to the behaviour of propellers on a moving body or aeroplane, particularly as the article (July 3rd) confirms all my preconceived notions about propellers, and I hope to have some others confirmed if the second portion of the subject is forthcoming in FLIGHT.

Yours very truly,

MONTFORD KAY.

PROPELLER CHALLENGE.

To the Editor of FLIGHT.

SIR,—I fully endorse the facts given in your courteous footnote of my last letter, and regret not to have been quite sufficiently explicit in the matter.

Practical Aerodynamics.

By MAJOR BADEN-POWELL.

(Aeronautics.)

IN this little volume, which is apparently Part I of a larger work, Major Baden-Powell deals mainly with the subject of air-pressure on normal and inclined planes, the cambered aerofoil proper being allotted a chapter at the end of the book. The scope of the work includes a summary and review of the theories and experiments relating to air-pressure which have been published by the various authorities who have from time to time been engaged on this very important work.

The eleventh word in the eleventh line in my last week's letter should, by the way, have read "won't" instead of "must."

Yours faithfully,

WILLIAM COCHRANE.

RE INTERNATIONAL POINT-TO-POINT RACE FROM HURLINGHAM.

To the Editor of FLIGHT.

SIR,—In your issue of May 29th, a statement is contained in your report of the above race, to the effect that the balloon "Ziegler," which landed nearest the winning mark, but was disqualified, was obliged, *owing to leakiness*, to carry three bags of sealed ballast, instead of a fourth passenger.

Being interested, as makers of the "Metzeler" materials from which this balloon was constructed, we have made enquiries into the matter, and have received the following communication from D. F. Linke, of the Frankfort Aero Club.

"In reply to your enquiry of the 16th inst., as to the condition of our balloon "Ziegler," we beg to inform that the balloon is in no way leaky. On the contrary, it held splendidly during the whole race. Capt. Thewalt preferred to carry ballast instead of a fourth passenger, simply as a matter of precaution, on account of the fact that the country in which the winning mark was situated was very unfavourable for landing. Although he was given to understand that this was permissible, a protest was lodged later, and upheld.

"Our old 'Ziegler' is still in excellent condition, and will to-day make another ascent, filled with hydrogen gas."

Even had the balloon shown any leakiness, this might have been considered excusable, in view of the fact that she had made over 85 ascents, including many rough landings, and in January last was blown loose in a gale; and rising to a great height, burst, owing to excessive pressure, tearing the envelope into three pieces. On repairs being taken in hand, the material was found to be still in excellent condition, and perfectly gas-tight. The Club fully expects to complete over 100 ascents.

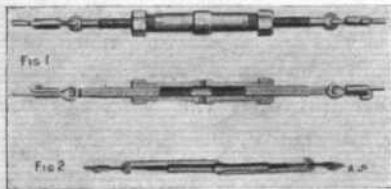
Whilst we have no doubt that the statement contained in your report was made in good faith, we should be glad if you would kindly rectify the matter by publication of the true facts, as the suggestion of leakiness is liable to convey an erroneous impression of the gas-retaining properties of our rubber-proofed balloon fabrics.

Yours faithfully,
C. ZIMMERMAN.

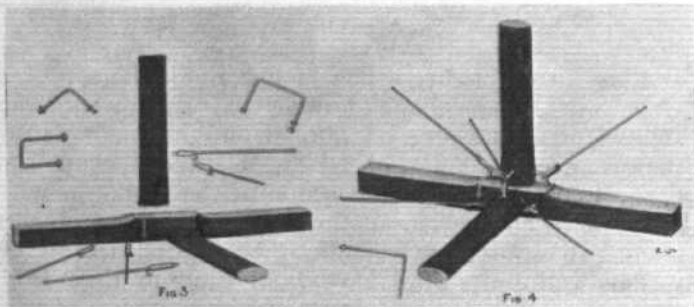
MODEL PARTS AND ACCESSORIES.

To the Editor of FLIGHT.

SIR,—It may interest your readers to know that we are now stocking a new patent type of wire adjuster, as illustrated in Fig. 1.



By means of the nut screwing on the slip sleeve, the use of the steel wire, acting as a locking arrangement, as shown on Fig. 2, is obviated. Fig. 2 represents the old type adjuster fitted with the steel wire locking device, which has the disadvantage of being in the way, and being likely to scratch or tear.



Figs. 3 and 4 represent the new device of tightening wires, which do away with the use of wire adjusters altogether. They consist of ordinary steel clips in U and L shapes. They are not quite so secure as wire adjusters, but they answer the same purpose for model aeroplanes.

Fig. 5 represents the different types of aluminium sockets which we stock for aeroplanes or model aeroplanes.

Yours faithfully,
EYQUEM'S PATENTS.

AN INGENIOUS WIRE TIGHTENER.

To the Editor of FLIGHT.

SIR,—I have recently patented a wire-tightening device, which is specially suitable for use on the stays of aeroplanes. As it may



interest you and your readers, I am sending you photo and description. It is much lighter, neater, more reliable (it cannot possibly slack back) and considerably cheaper than the usual "turnbuckle," and not the least of its advantages is that it is placed on the wire stay after it is fixed, and does not necessitate cutting and joining up the wire.

The photo practically explains the device and its mode of application. You will see that it consists of one piece only, a saucer-shaped steel stamping, one inch in diameter, with a central boss. Round the rim are four or more inclined slots, diametrically opposite to one another, in pairs; the centre boss is also slotted in line with one pair of the rim slots. The wire to be strained is placed in the centre slot and through the two slots in the rim which are in line with it.

On rotating the device by means of a key or screwdriver placed in the slotted boss (the rotation being in direction of inclined slots), the wire slips from the slots it is resting in, and on the next pair coming beneath it falls into them, and is automatically locked by its own tension. The surplus wire is wound on the boss.

Yours faithfully,
ALFRED P. PORTWAY.

TERMINOLOGICAL EXACTITUDE.

To the Editor of FLIGHT.

SIR,—I am not a technical expert, but I wish to lodge a protest against Mr. Moore-Brabazon calling his aeroplane an "aerodrome," as it is neither "a rapid motion through the air" or an aerial "race course." Also with regard to "pterygoidal," can a plane be conscientiously called a wing?

I remain, yours truly,
S. W. MAXWELL.



NEW COMPANIES REGISTERED.

Spencer Syndicate, Ltd.—Capital £1,000, in £1 shares. Manufacturers of and dealers in balloons, aeroplanes, and airships of all kinds, &c.

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Women's Aerial League of the British Empire, The Cottage, Cockfosters, Herts.—Limited by guarantee. 100 members. Liability 10s. "Limited" omitted from title by licence of Board of Trade.

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THE publishers have pleasure in announcing that they have secured a few of the back issues of FLIGHT, and any of our new readers who may wish to complete their sets may obtain the first twenty-seven numbers for 3s. 6d. (abroad 5s. 3d.) post free, from the Publishers, 44, St. Martin's Lane, W.C.

FLIGHT.

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